

SPECIFICATION AMENDMENTS

Page 1, lines 2-9:

This application is a continuation-in-part of U.S. patent application Serial No. 09/979,415, filed November 14, 2001, which is the U.S. national phase of PCT/US99/12945, filed June 11, 1999; and is a continuation-in-part of U.S. patent application Serial No. 09/602,189, filed June 12, 2000, now U.S. Patent No. 6,405,403, which is a continuation-in-part of U.S. patent application Serial No. 09/094,551, filed June 12, 1998, now U.S. Patent No. 6,298,517; and claims priority from U.S. provisional patent application Serial No. 60/260,969, filed January 10, 2001, and U.S. provisional patent application Serial No. 60/311,463, filed August 11, 2001; the entire contents of all of which are incorporated herein by reference.

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Referring now to Figures 9 and 10, a third embodiment of a mop 100 according to the present invention is shown. This embodiment differs from the earlier embodiments mainly in the cross sectional shape of the mop head 102. In this embodiment, the mop head 102 has a triangular cross section. The triangle has two long sides and one shorter side. The long sides define an upper surface 104 and a lower surface 106 of the mop head 102 and the shorter side defines a back surface 108. The sides are interconnected by radiused corners. The radiused corner which joins the upper 104 and lower 106 surfaces defines the leading edge 110 of the mop head 102 and the back surface 108 defines the trailing edge. As discussed earlier, the mop head 102 is formed similar to a paint roller having a pair of end caps 112 interconnected by a plurality of metal rods 114. A roll of cleaning material is wrapped about the metal rods ~~116-114~~. A spring ~~118-116~~ is positioned around the support portion 18 of the mop head mount 14 and is designed to bias the mop head 102 to a predetermined neutral position relative to the mop handle. The spring 116 wraps around the support portion 18 of the mop head mount 14 and is positioned between one of the end caps 112 of the mop head 102 and the interconnecting portion 17 of the mop head mount 14. One end of the spring 116 is a tab 118 which engages a hole 120 in the end cap 112. The other end of the spring 116 includes a clip 122 for clipping onto the interconnecting portion 17 of the mop head mount 14. When

the spring 116 is in its unstressed position, the mop head 102 is in the neutral position relative to the mop handle. This neutral position is indicated as A in Figure 10. As the mop head mount 14 is rotated in either direction away from the neutral position, the spring 116 begins to resist the movement. However, the spring rate is chosen so as to allow the mop handle to move in either direction sufficiently to allow use of the mop head 102 on a cleaning surface. For example, in Figure 10 the position marked as B is the position in which the mop head mount 14 would be located when a user wishes to use the lower surface 106 of the mop head 102 to clean a horizontal surface. In this position, the spring 116 creates only minor resistance to further rotation of the handle thereby allowing easy use of the mop 100. However, if the user attempts to rotate the handle substantially beyond the position marked as B, the spring 116 will resist the movement sufficiently to prevent the mop head 102 from moving to an unusable position. When the user wishes to use the upper surface 104 of the mop 100 to clean a horizontal surface, the user merely flips the handle over thereby bringing the upper surface 104 close to the horizontal surface to be cleaned. The mop head mount 14 can then be flexed to the position marked as C so that the handle is in a comfortable position during use of the mop 100. The configuration shown in Figures 9 and 10 allows for easy use of either the upper 104 or lower 106 surface without the necessity of forcing the mop head mount 14 past a pivot stop.

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The cleaning material configured for use with a mop 10 according to the present invention has utility beyond the illustrated mops 10. For example, cleaning material 40 as illustrated in Figure 3 can be torn from a roll 42 of such material 40 and used by hand to clean up a spill or other mess. A user may keep a refill roll handy for this purpose. Such material 40 can be especially useful when cleaning up objectionable messes that the user does not wish to contact with their hand. The moisture barrier layer ~~66~~68 prevents waste contacting the bibulous layer 66 from being transported through to the user's hand. In addition, the adhesive 64 disposed on the moisture barrier layer 68 can be used to stick the cleaning material 40 to a user's hand for small cleanup jobs. A piece of material 40 can be stuck to the user's hand and formed around fingers and thumb and used to clean objects such as individual slats of vertical

blinds and fan blades on ceiling fans. The user merely needs to wipe the object to be cleaned instead of wiping it with their bare hand. There is no need to grip the cleaning sheet; instead, the cleaning sheet hangs onto the user's hand.

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Intermediate the bonded portions of the margins and the area where the cleaning layer is connected, perforations ~~318~~322 are preferably provided. The perforations may be adjacent the cleaning layer 312, or farther outboard. Perforations allow for separation of the inner portion of each cleaning sheet from the interconnected edges once the outermost cleaning sheet is soiled. Tabs 320 are preferably provided adjacent the front edge 302 for grasping by a user to remove the soiled cleaning sheet. As discussed previously with respect to other embodiments of the present invention, other approaches to allowing separation of an individual sheet may be provided. For example, instead of perforations, weakened areas may be provided. An optional rear tab 320 may be provided adjacent to each of the rear edges 304 of the refill 300. The second tab 320' allows the outermost soiled sheet to be pulled away from either side and also allows a user to grip a tab on the front and rear to minimize soiling of their hand and flipping of debris off the sheet.

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Preferably, for a refill according to the present invention to work best with a mop head of the type designed to receive a single cleaning sheet, the edges, whether bonded or consisting of a single backing layer, are significantly thinner than the portion of the refill between the edges. For example, in the embodiment of Figure 18B, it can be seen that the central portion of the refill is substantially thicker than the edges. In order to work with a mop head designed to receive a single sheet, it is preferred that the edges of the refill have a thickness less than ¼ inch. Thicknesses less than this, such as ⅛ inch or less, may work even better, with less thickness being most preferred. The mid portions of the refills, on the other hand, can be substantially thicker since the thickness does not interfere with interconnection with the mop head. It is preferred that a refill include at least three cleaning sheets, with five or more being more preferred. In some embodiments, as many as 10-30 or more cleaning

sheets are included in a refill. A stack of cleaning sheets that each include a cleaning layer, such as a non-woven fabric-like material, may have a thickness from $\frac{1}{2}$ to 1 inch in the center portion, though it may be thicker or thinner for certain applications. In an embodiment such as shown in Figure 18B, and wherein the refill includes 10 cleaning sheets, the thickness in the mid portion may be $\frac{1}{2}$ - 1 inch or more while the margins have a thickness of only $\frac{1}{8}$ inch or less. Obviously, the embodiment of Figure 18C has a very thin margin less, since it consists of only a single backing sheet 324. In this case, the backing sheet may have a thickness of one one-thousandth or less, while the cleaning layers 326 may have a total thickness of $\frac{1}{2}$ inch or so for a 10 layer refill. The embodiment of Figure ~~[[18]]~~ 18D appears to have much thicker margins, though this embodiment may also be created with much thinner margins. For example, the margin areas may be compressed and bonded sufficiently to have a thickness less than $\frac{1}{4}$ inch with a thickness, with a thickness less than $\frac{1}{8}$ inch even more preferred.

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Referring now to Figure 20, an additional embodiment of a mop 350 is shown. In this embodiment, cleaning sheets 352 are wrapped about a mop head 354, as shown. Together the stack of cleaning sheets 352 and the mop head 354 form a mop head refill. The mop head refill has holes 356 formed in its top. Staples 358 may be used to hold the stack of sheets 352 to the mop head 354. Alternatively, the sheets ~~[[35]]~~ 352 may be attached to the head 354 in any other way, including adhesive, sonic, heat, or mechanical bonding, or hot sealing. The head and sheets may also be integrally formed. Shown above the mop head refill, a plastic holder 360 is shown with a mop handle 362 extending upwardly therefrom. The holder 360 has spikes 364 extending downwardly therefrom designed and positioned to engage the holes 356. An indentation 366 is provided to access pull tabs 368 so as to allow removal of dirty outer sheets from the stack 352. Once all of the sheets in the stack 352 are used, the mop head 354 may be removed from the holder 360 and replaced with a new refill. The mop head 354 may have a curved lower surface, as shown, or may be more rectangular with a flat bottom surface. The mop head 354 may be constructed of a variety of materials. In one preferred embodiment, the mop head 354 is a disposable foam or paper material with the